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BOOK REVIEWS

Sulla Matematica degli Antichi Cinesi, Nota di GIOVANNI VACCA. (Estratto del Fascicolo di Ottobre, Novembre e Dicembre 1905 del Bollettino di bibliografia e storia delle scienze matematiche.) Torino.

That the Chinese possess a particular genius for mathematics is well known, and owing chiefly to the labors of Alexander Wylie we are able to outline clearly their proficiencies in this science, though for a detailed knowledge of the subject far more is left to be done.

The object of the present paper is a new discussion by a mathematician of the ancient Chinese Pythagorean proposition which, although its assignment to the date 1100 B.C. cannot wholly withstand literary criticism, was doubtless known in China in times anterior to Pythagoras, and, as the demonstration of Dr Vacca plainly shows, must be quite independent of Greek science. The ancient document in which this, with many other mathematical principles, is laid down for the first time, has been translated before by Gaubil, Biot, and Wylie. Dr Vacca communicates a new revised translation furnished by Professor C. Puini, of Florence, from which it appears that the Chinese theorem differs fundamentally from that of Pythagoras by being based on the construction of a right angle and on arithmetical computations inferred from it. This seems thoroughly compatible with the drift of Chinese mathematical genius, whose forte was always arithmetic and algebra, but not geometry, and renders it unnecessary, as Dr Vacca is inclined to propose, to call attention to the development of the application of arithmetical calculations to geometry and astronomy among the ancient Babylonians. Sino-logical reader may here be referred to the cyclopedia *T'u shu chi ch'êng* (sec. 3, bk. 103, 4, p. 22b), in which the geometrical construction of the right-angled triangle with the sides 3, 4, and 5, and their corresponding quadrates, is given in an excellent figure.

Dr Vacca then refutes the sweeping statements of some European mathematicians who either refuse to recognize the existence of a mathematical science in China or see in it only the constitution of a mere rude mass of empirical rules. In his opinion, we should say that mathematics takes its origin whenever some relations of mutual dependence of propositions and rules appear, and when such relations begin to be admired. The existence of the esthetic seems to him to be fundamental in mathe-

matics, not only for the purpose of guiding us in the earliest beginnings of development, but also for placing in a right light the complicated edifice which we now possess. From the fact that the most lively admiration is expressed for the discovery of the ancient Chinese Pythagorean theorem, he thinks he is justified in inferring that it represents a real mathematical demonstration, and it may be granted that he is apparently right in this conclusion.

It is to be hoped that Dr Vacca will continue his meritorious studies in this woefully neglected field and devote some of his energy, for example, to the Chinese problems of algebraic equations, which, more than anything else, must elicit our undivided admiration.

B. LAUFER.

Skalpieren und ähnliche Kriegsgebräuche in Amerika. Inaugural Dissertation zur Erlangung der Doktorwürde der Philosophischen Fakultät der Universität Leipzig, vorgelegt von GEORG FRIEDERICI. Braunschweig: Friedrich Vieweg und Sohn, 1906. 8°, 172 pp., map. (5 Marks.)

The author of this paper on scalping and cognate war customs in America, Captain Georg Friederici, of the German army and former legation attaché in Washington, is already known to American scholars for his Indian studies. The present paper, by which he obtained his doctor's degree at Leipzig, is one of the most important ethnologic monographs which have appeared in a long time. The investigation covers the whole American continent, but naturally concerns most the United States and Canada.

The author deals first with the origin of the word *scalp*, which he derives from an old Low German word signifying shell or sheath, and shows how this convenient monosyllable superseded the more cumbersome descriptive terms used by early Spanish, French, and English explorers. The custom itself he considers essentially American, very few references to it occurring in any other part of the world since the time of Herodotus, who mentions it among the ancient Skythians. The first definite mention of the custom in America is by Cartier, who, while in the vicinity of the present Montreal in 1535, was shown five scalps dried and stretched on hoops, which the Indians had taken from slain enemies toward the south. Farther down the river in 1603 Champlain witnessed a dance in which fresh scalps were carried by the women as they danced. De Soto, Laudonnière, and Captain John Smith found the custom among the southern tribes.

Contrary to the general supposition, our author shows conclusively